



NEWSLETTER NO. 124

AUGUST 1997

The Black Country Geological Society

The Society does not provide personal accident cover for members or visitors on field trips. You are strongly advised to take out your own personal accident insurance to the level you feel appropriate. Schools and other bodies should arrange their own insurance as a matter of course.

Leaders provide their services on a purely voluntary basis and may not be professionally qualified in this capacity.

The Society does not provide hard hats for use of members or visitors at field meetings. It is your responsibility to provide your own hard hat and other safety equipment (such as safety boots and goggles/glasses) and to use it when you feel it is necessary or when a site owner makes it a condition of entry.

Hammering is seldom necessary. It is the responsibility of the hammerer to ensure that other people are at a safe distance before doing so.

FUTURE PROGRAMME

Lecture meetings are held in the Banquet Room (Dudley Suite) at the Ward Arms Hotel, Birmingham Road, Dudley. Phone: (01384) 458070. 7.30 p.m. for 8 o'clock start.

SATURDAY 13th SEPTEMBER to SUNDAY 14th SEPTEMBER. Rock and Fossil Fair at Dudley Town Hall. Each day 10.00 a.m. to 5.00 p.m. See article by Colin Reid inside this newsletter.

The fair will be held over two days and will have stands and displays on geological themes from public bodies, private companies and local and national societies, an 'Experts' stand to identify specimens, as well as commercial dealers selling mineral specimens, fossils and fossil replicas, maps, books etc.

The BCGS has again been asked to provide helpers to act as cashiers, stewards etc. - see the separate announcement **A FEW MORE VOLUNTEERS ARE NEEDED** - in this newsletter. Anyone willing to help - or to donate specimens for sale on our stand - should contact Paul & Judith Shilston at 16 St. Nicolas Gardens, Kings Norton, Birmingham B38 8TW, phone 0121 459 3603.

SUNDAY 5th OCTOBER. Afternoon field meeting at Worcester Cathedral "The Building Stones of Worcester Cathedral". Leader: Dr. Eric Robinson (University College London).

MEET 1pm at the North Door of the Cathedral (this is the main entrance).

See the separate notice elsewhere in this newsletter describing this field meeting.

SUNDAY 12th OCTOBER. Field meeting to Aust Cliff (near the Severn Bridge) and Hock Cliff near Frampton-on-Severn. Leader: Andrew Mathieson (Bristol City Museum).

Meet 10.30 a.m. at Aust by the road junction to the disused ferry jetty (grid ref. 564889) near the original (1966) Severn Bridge. NOTE that the original Severn Bridge now carries the M48 motorway (NOT the M4 which goes over the new bridge). Coming from the M5, follow the signs for Chepstow M48, then exit from the M48 at junction 1 (Severn View Services), turn south along the A403 signposted to Avonmouth; the first right turn leads to the meeting point.

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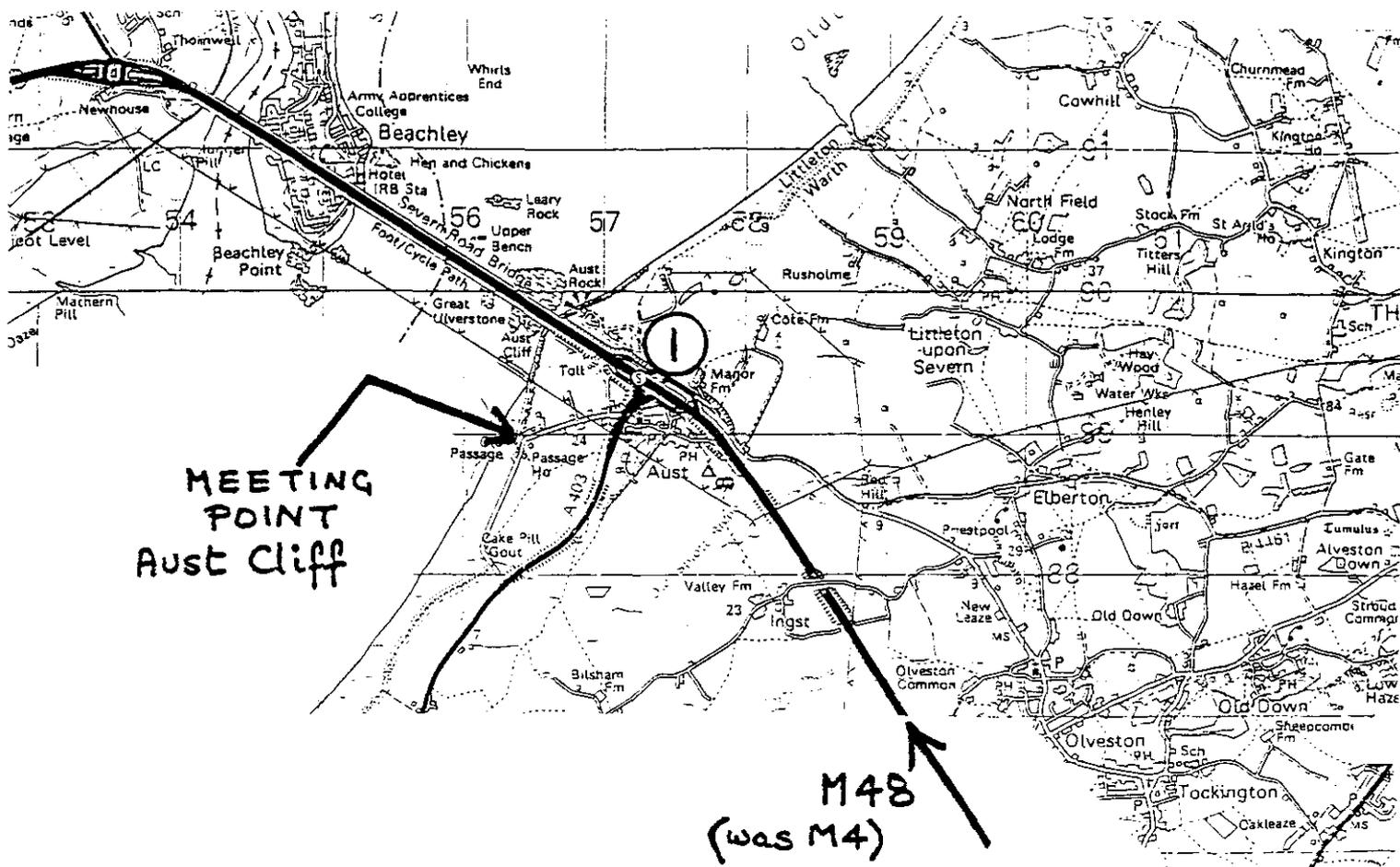
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Andrew Mathieson writes: "Aust Cliff is a 'classic' geological site with an excellent sequence through the Triassic to the base of the Jurassic. Although the site is an SSSI, collection of fossils is allowed because there is continuous erosion of the cliff and there is plenty of material to find on the beach.

The top of the cliff is capped by Lias limestones rich in bivalves and the first Jurassic ammonites. Below are Upper Rhaetic beds with "Crazy" Cotham Marble, then the Lower Rhaetic with many bivalves, fish and reptile teeth and bones, with many intriguing trace fossils. The "Bone Bed" is thick and the origin of its concentration of coprolites, pebbles and (some) bones remains satisfyingly elusive. The lower cliff is Mercia Mudstone with much gypsum, some celestite and a few casts of halite crystals".

ANDREW MATHIESON has been the geology specialist in Bristol Museums Education Service for over 20 years, having previously been geology curator at Leicester Museums. He has concentrated on introducing people of all ages to geology, particularly through fieldwork, and is also very much concerned with geological site conservation.

There will be a lunch stop at a local pub, probably the Bell Inn at Frampton-on-Severn.

AFTER LUNCH we will visit Hock Cliff (GR. 730090) alongside the River Severn at Fretherne near Frampton-on-Severn. Hock Cliff is in the Lower Lias and shows bands of limestone and shale; it is particularly famous for its fossil bivalve *GRYPHAEA ARCUATA* (or 'Devil's Toenail') found in the cliff and along the beach. There can also be ironstone nodules, fragments of ammonites, and pyritised specimens of *Gryphaea*.

AS BOTH SITES CAN BE VERY MUDDY AND WE WILL BE VISITING AT LOW TIDE, VISITORS SHOULD WEAR BOOTS, OR PREFERABLY WELLINGTONS.

MONDAY 27th OCTOBER Lecture "The Story of HERON, a high pressure/high temperature oil field in the Central North Sea" by Dominic McCormick (Shell Exploration & Production Aberdeen).

Dr. McCormick writes: "The main aim of the story will be to demonstrate how the geology governs the design and execution of the drilling wells in the North Sea. The lecture will start with an introduction to North Sea geology and will cover timings, source rocks, seals and reservoirs. Then I will explain a little on seismic acquisition and interpretation, and describe well design and how it is governed by the geology. Finally an explanation of how the exploration/appraisal wells of the HERON field were drilled, followed by a quick overview of the production well planning/execution that is now ongoing".

Dr. DOMINIC McCORMICK started in the oil industry as an exploration team assistant then completed a BSc degree with Birkbeck College, University of London in 1984. Since then he has worked as an exploration team geologist and operations geologist in London and Aberdeen. He obtained his PhD at Aberdeen University working on the Cromer Knoll Group of the Central Graben and is currently involved in exploration/appraisal and development drilling of High Pressure/High Temperature wells in the Central North Sea.

MONDAY 24th NOVEMBER. Lecture by Dr. R.J. Kennedy (Birmingham City Museum).

MONDAY 19th JANUARY 1988. Lecture on Greenland Geology by Dr. Paul Smith (Birmingham University).

MONDAY 23rd FEBRUARY Annual General Meeting followed by lecture 'Laterites can be fun' by Dr. Des Bowden (Society member/Newman College, Birmingham).

THURSDAY (note Thursday) 19th MARCH. Joint lecture with The Geological Society of London (West Midlands Group). The subject of the lecture will probably be the geological aspects of the D-Day landings on the French Coast in June 1944.

MONDAY 23rd MARCH. Lecture: Environmental geology - examples from Finland and the UK. By Dr. Roger Dackombe (Wolverhampton University).

MONDAY 27th APRIL. Lecture on Carboniferous Corals by Dr. John Nudds (Manchester Museum).

DUDLEY ROCK AND FOSSIL FAIR '97

After a three year absence, Dudley Rock and Fossil Fair - Britain's biggest public geological event returns on 13th/14th September, and promises to be the best yet. Dudley Town Hall will once again be the venue for up to 40 exhibitors from across the geological spectrum and a host of events designed to make geology fun. Over 4000 visitors - families, students and enthusiasts from all over the country are expected to attend.

Not surprisingly, this year's theme is 'Dinosaurs'. A special display on 'Victorian Dinosaurs' will look at the first, crude dinosaur models, made for the Great Exhibition at Crystal Palace in 1851. For a 21st century view you can surf the saurians on the world wide web with the Dinosaur Society or purchase memorabilia at the Society's silent auction. Film presentations including 'The Land that Time Forgot' and 'When Dinosaurs ruled the Earth' will be shown in the novel surroundings of Dudley's Crown Court. Dudley Museum is offering a Jurassic feast with its current blockbuster exhibition 'Return of the Dinosaurs' which features superb skeletons, models and interactive displays.

A number of exhibits will be dedicated to the history and exploitation of Dudley's spectacular man-made caverns and tunnels and to the superb fossils for which the area is world renowned. This year the BCGS will have the largest display, concentrating on the Society's conservation activities. Other local exhibitors include Johnson, Poole and Bloomer, Dudley Canal Trust and the Black Country Museum.

If your tastes lie well above ground, the Midlands Astronomical Society will have the latest images and information from the red planet in their display 'Rocking around Mars'.

Other organisations appearing at this year's Fair will include the Geological and Gemmological Societies, while the British Geological Survey will be demonstrating its new CD ROM on the rocks and landscape of the Lake District.

There are plenty of opportunities to 'get physical' at this year's event, with something to do on every display stand. Gold panning, gem-cutting and fossil cast making will once again be on the menu for children. Top mineral and fossil dealers have been invited along to tempt visitors with gemstones, jewellery and prehistoric tit-bits.

Members of BCGS are invited to assist on the Roadshow stand, where experts from the Geological Curators' Group will also be on hand to identify items brought in by members of the public.

As in previous years there will be numerous special events - geological walks, underground excursions and competitions taking place over the weekend. This year to meet demand there will be two 'Over and Under Dudley' trips to Wren's Nest National Nature Reserve and into the limestone caverns of the town's Castle Hill. Dudley Canal trust will also be running a special excursion through Dudley Tunnel - at over a mile, one of the longest canal tunnels in the country.

May I take this opportunity to thank members of the Society for your enthusiastic support in helping to mount the Fair. It simply would not be possible without you! I am particularly indebted to Paul and Judith Shilston for their role in co-ordinating the volunteers. I look forward to seeing you all at the Fair. No matter in what capacity you are attending ... enjoy the Show!

Colin Reid

EDITORIAL

I have seen some most interesting geological reports in the press over the summer. Geology has had a prominent place in the news. A highly dangerous volcano erupted on Montserrat. Pathfinder landed on Mars and sent back such spectacular pictures and is apparently functioning well. News was reported of the first supercomputer in Britain developed for the study of geophysics. It will investigate activity in vents at the bottom of the Atlantic Ocean. It is believed that bacteria flourish at very high temperatures creating energy from sulphates. An expedition by submarine to vents 4 km below the surface of the Atlantic will measure the velocity, temperature and chemicals coming out of vents and feed the information into Cambridge University's Enigma supercomputer. 'Enigma' will also be used for studies of the relationship between ocean currents and climate and to study activity in the earth's core according to a press report. In September a Birmingham University expedition sets out for Nevada to study the mass extinction at the end of the Triassic, 205 million years ago. --- and --- the dinosaurs are back at Dudley museum!

REPORTS

Sunday 18th May. Field Meeting to Shropshire, Wenlock Edge and Leintwardine. Leader: Dr. Paul Smith (Birmingham University).

On a very pleasant, if somewhat cold, day, a group of around 40 met near Much Wenlock for a splendid field trip in the Shropshire Silurian. At the first stop on top of Wenlock Edge our leader set out the geology of the area. Standing on top of the reef limestones of the Much Wenlock formation the nearby Llandovery formations could be seen, with the more distant Ordovician and Cambrian hills clearly visible.

At Ippikins Rock the lowest formation visible was a nodular limestone bed; on top of this were visible the stromatoporoids on which the reef was built. The reef formed of corals, algae and stromatoporoids was an active mobile structure which became larger in a northward direction as the Silurian seas became shallower.

The second stop of the day, the road cutting at Hill End Farm, is a classic locality of the Llandovery series. Here marine sediments were deposited on a shoreline of Precambrian rocks during a marine transgression. The cutting shows mudstones and siltstones with a diverse fauna. There are also limestone horizons with a very specific fauna of the brachiopod *Pentamerus*, the rock in places being largely formed of this brachiopod.

Following lunch at Winstanstow the party visited a quarry at View Edge where in the past Aymestry limestone was extracted. The fossil fauna here is dominated by the brachiopod *Kirkidium*, sometimes in considerable profusion. The formation is diachronous and part of the Upper Bridgewood formation. This limestone is generally of high energy origin and exhibited some cross bedding.

Our final location was Mocktree Quarry near Leintwardine, a key locality for the palaeogeography of the Ludlow age. In Upper Ludlow times this area was at the edge of a submarine shelf with channels at the heads of submarine canyons. Some of the beds in the quarry have been interpreted as catenary channel fill sediments filling canyons cut into the Mid-Ludlow deposits. These sediments contain an unusual fauna of eurypterids, echinoids, brachiopods and trilobites.

This was certainly a most interesting field meeting, all the more so for the entertaining and informative leadership of Paul Smith. The large group, including a very large number of our friends from the Manchester Geological Society, enjoyed a splendid day and our thanks are extended to Dr. Smith.

Steve Hughes.

Sunday 8th June. Field meeting "The Malvern Hills - a geological viewpoint". Leader: Eddie Bailey

Eddie Bailey, who is one of our own members, comes from Worcester and knows the Malverns well. For this meeting he chose the southern section of the Malverns - Herefordshire Beacon, Gullet Quarry and Chase End Hill - and promised that *"we would visit some dramatic scenery and see some impressive geology. It would be a story from the Precambrian onwards, explaining how the rocks we will walk over, and those we will see at a distance, came to be, and putting these rocks and their structures into a global plate tectonic setting using the most up to date readily available data"*.

Starting over 1000 Million years ago, he divided the party into groups to represent the palaeo-continent of Laurentia, Eurasia and Gondwana, then directed them as they re-enacted continental drift over the next billion years. Around 1000 M years the continents were converging (*the groups denoting the various continents moving together accordingly*) leading to subduction and mountain building and this created several uplifted regions off the north Gondwana coast; one such land mass termed eastern Avalonia contained the future England, Wales, S. Ireland and parts of western Europe. - *and the corresponding members of the party were moved around to show this.* Around 680 M years several large igneous bodies were injected into the crust and these became the MALVERN HILLS.

So now we had the general setting and we had all got the idea of how the continents drifted. The first location visited was HEREFORDSHIRE BEACON which gave a good overview of the area, and Eddie had also taken the trouble to carry up samples of Malvern rocks from several localities so that they could be compared. GIANTS CAVE on the further side of the Beacon shows pillow structures of the Warren House formation, probably produced on the ocean floor; they are dated around 566 M years and so are some 120 M years younger than the Malvern Hills, and are believed to have been thrust up against the Malverns.

Moving on to GULLET QUARRY, we looked at the Malvern Quartzite basal conglomerate, which is Lower Cambrian (545 M years). It is interpreted as a shoreline deposit adjacent to a mountainous area which was being eroded, as it contains rounded pebbles including some of ?Uriconian Volcanics. Further on we moved into the Upper Cambrian, Whiteleaved Oak Shales and Bronsil Shales; *the leader made us sit there while we were submerged by the LLANDOVERY TRANSGRESSION*, an earlier Silurian event when there was a worldwide rise in sea-level and the shoreline moved eastwards, leaving US SUBMERGED while the Malvern Hills stood out as islands.

This traumatic event was the signal to move to lunch at the Plume of Feathers pub, and we were fortunate that the only rain of the day - in fact a torrential thunderstorm - occurred while we were safely under cover.

After lunch we returned to the GULLET to see the Malvernian/Llandovery contact, probably the most important Silurian/Precambrian contact in the British Isles. The junction has a high angle of dip, with sandstones and siltstones of the Llandovery against the Malvernian, with a conglomerate interface between. The exact status of this junction is disputed, as to whether the conglomerate is a basal sedimentary conglomerate, or is due to a fault or fracture giving a 'crush' conglomerate.

The final locality was CHASE END HILL, to which we were all transported by two minibuses kindly organised by the leader. Chase End is a superb viewpoint and it made a fitting climax to the meeting. To the north there are the main summits of the Malverns, eastwards shows the Midlands Triassic plain, while looking to the west shows the nearby landscape of low hills marked by two dolerite sills, with Welsh scenery beyond.

The magnificent handouts - more like books - on Malvern geology that Eddie had prepared for the meeting capped what was one of the best field meetings most of us can remember. All thanks to Eddie for his sterling efforts.

Paul Shilston

Monday 23 June Field meeting to Snailbeach Historic site and Old Mine led by Peter Sheldrake of Shropshire C.C. Environment Department

Snailbeach mine, which yielded lead, zinc and barite, worked veins in the Ordovician Mytton Flags which are sandwiched between the Stiperstone Quartzite and the Hope shales. The veins trend east west and dip at 70° and 80° into the hillside. The main veins are of barite yielding galena while deeper they are of calcite bearing sphalerite. At still greater depth copper and tin are found but these have not been mined. Lead ingots from Roman times have been found in the area but traces of the earliest mining are obliterated by later working. Records of mining exist from the seventeenth century. The heyday of mining was 1850-1870 when 500 men were employed. The mines closed in 1911 though surface working of barite continued until 1955. The mine was worked to a depth of 1600 feet, the upper part draining freely from adits but water being pumped to the 112 yard level.

The whole site had become very dangerous. The buildings are being stabilised but English Heritage does not allow restoration work, only work which will stabilise them in their existing condition. Some of the remaining buildings are quite magnificent, twelve of them being listed. They were well built but the wooden lintels have rotted. Building preservation work has been carried out to a high standard.

The locomotive shed housed the engines which brought coal to the mine and has a roof and is to be used as a mine centre. The mine shafts have been made safe with concrete caps. The 1797 winding engine house and the 1850 blacksmith's shop remain, the latter with its forge and an enormous pair of bellows, also the miners dry, a large building without windows or cooking facilities, where many of the miners may have slept. The compressor engine house sent compressed air to the mine for the drilling tools. There is a large Cornish Engine house on site. The engine pumped water from the mine. The magazine house has a double stone wall and had bark on the floor to prevent sparks from the miners' feet. The walls were lined with wood and the roof was of wooden pitch to encourage any explosion to discharge its energy upwards rather than horizontally

Unusually, the ore was smelted on site, about 3/4 mile away. A large chimney connected to an underground 1/2 mile long flue created a draught for the smelter.

The buildings today are hidden in a wooded setting among the scattered houses of the village. Fish live in the pond that formerly provided water for the mine and increasingly the surrounding houses are becoming desirable residences for an incoming population.

The adit we went in (Perkin's Level adit?) is high up in the mine. The adit was about 5ft high. One heard the bangs as hard hats hit the roof. Evidence of rock falls could be seen, especially in the large stopes which rose almost to ground level. The adit was underwater to a depth of about 5 inches following a period of heavy rain. The barite veins were up to approximately 4ft thick and their steep dip was clearly seen. The miners worked with candles stuck in their felt hats by lumps of clay. The mine had no methane but does have radon. Water drains out through the adits. The miners worked upwards, from bottom to top, to exploit gravity in the removal of the loosened ore. Rough plank staging was placed across the stopes to support their work. Our visit terminated at a large scree slope where good specimens could be collected. Consultants have indicated the strong probability of a roof collapse in the upper stope area over an indefinite time span, as relatively little thickness of rock separates the mined chambers from the surface.

The waste from the mine was most hazardous. The white tip waste was like dune sand and lay in the middle of a village. Winds blew and contaminated the surrounding land. The toxic zinc prevented a vegetation cover and animals fell sick on eating the dust. This waste has been removed or stabilised and a large tip of coarse waste of host rock from the excavation of the shaft has been left for the enjoyment of geologists. This proved a big attraction for some of our members.

Kate Ashcroft.

THE CONSERVATION COLUMN

As I write, the bright glow of the 1997 Rock & Fossil Fair has appeared once again on the autumnal horizon. It foretells the arrival of another action-packed geological weekend in just a few short weeks time.

This national event rightly dominates this edition of the newsletter. It has been crafted to be a blend of geo-spectaculars ranging from dinosaurs to diamonds (see Colin Reid's article) and the geo-essentials of exploration, education and of course, conservation. This event is a truly magnificent geological selection-box and is warmly wrapped in popular appeal.

The fair brings together so many strands of geology and so many interested people that it would be hard to imagine a better gathering at which we could wave a banner of conservation, and so we shall.

The BCGS has a particularly important role to play in this Earthy celebration. As usual, we will provide the much needed voluntary stewardship at the Town Hall in Dudley and will lead walks and talks which explore the local geological terrain but we also have an important role to play as ambassadors for responsible collecting and care of sites and specimens.

The theme of the BCGS stand this year is CONSERVATION and the stand will be decorated with visuals and slogans which promote this worthy cause. The BCGS stand is the largest at the fair and will be the very first stand that people will see as they enter the Town Hall. At the stand, by being ourselves we will make our most important contribution to the fair (and to the science as a whole).

It is the spirit of friendliness, approachability and enthusiasm that is our greatest gift to the fair. These attributes make the visitors feel welcome, help them to relate to, and support, the things that we do and perhaps help us to introduce them to aspects of the world around them which they may never have realised existed (and certainly never valued before).

As BCGS members, we all have an opportunity (or perhaps an obligation) to point out to the visitors as they come into the fair, that the specimens and sites from which they come, often have a fragile and irreplaceable beauty, and that these need our respect and care to ensure their survival in the future.

I hope that the stand will give visitors both a welcome and something to think about as they wander around the fair.

And in the aftermath of the fair, when the halls stand empty and echo no more to the sounds of excited punters and exhibitors, as the glow of the fair grows dim on the winter horizon and the shadows of a happy weekend grow longer..... where then the spirit of BCGS geological conservation?.....

.....Well, it will be found on the canal-side at Brevins Bridge, Netherton, with its sleeves rolled up and its wellies on as some more classic geology gets a facelift !

But more about that next time.....

Graham Worton



"YES SON, ONCE UPON A TIME YOU COULD FIND THINGS LIKE THIS AROUND HERE!"

ITEMS IN BRIEF

1. Colin Reid appeared on BBC2 in "Tracks" and explained the mysteries of the Giant's Causeway.
2. Southampton Mineral and Fossil Society's Mineral and Fossil Fair - 20th September.
Enquiries 01489 787300.
3. Rock 'n' Gem Show, Cheltenham Racecourse - 18th and 19th October.
4. New from the British Geological Survey - A CD-Rom titled Discovering Geology - The Lake District.
Price £39-50. It includes geology, geochemistry, mines and mineralisation data, photographs, rock types and petrographic sections, palaeoenvironmental scenes and Landsat Thematic Mapper images. It is designed for everyone from Key Stage 4 to University research levels and anyone interested in the Lake District. Order from the sales desk at BGS, Keyworth, Nottingham, NG12 5GG. Tel 0115 936 3241.

Also from the BGS come 'Fossils the story of life' by Sue Rigby and 'Earthquakes - our trembling planet' by Susanna van Roase and Roger Musson and both are designed for Key Stage 4 and A level and are priced at £3-50 each.

5. Return of the Dinosaurs - Dudley Museum, until 14th September.

Forget Isla Nubla - Dudley's where the real action is this summer! Following the enormous success of 'Dinosaur Mania' in 1992, Dudley Museum is currently presenting 'Return of the Dinosaur', one of the most popular exhibitions yet shown at the St. James's Road venue. The show incorporates two separate travelling exhibitions, put together for the first time under one roof. *The Dinosaur Roadshow* explores how prehistoric creatures lived and became preserved as fossils. Seen to date by over a million people it features popular interactive displays and rare fossil remains including a young Mososaur. *Dinosaurs Now and Then*, prepared by the Dinosaur Society, traces the history of dinosaur exploration and study from Richard Owen to Jack Horner, using models, artwork and material brought back from recent expeditions to dinosaur sites in Africa and the Orient.

The centrepiece of the exhibition is a Jurassic landscape with life-sized models and skeletons, including carnosaurs such as Megalosaurus, Deinonychus and Velociraptor. With plenty of children's activities the show is proving a holiday smash. There is plenty for the serious buff to see and enjoy ... but go at opening time (10.00 a.m.) to avoid the rush!

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